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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/724,615

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Yoshihiko Imanaka

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EXAMINER

KEMMERLE III, RUSSELL J

ART UNIT

PAPER NUMBER

1731

DATE MAILED: 10/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/724,615

Applicant(s)

IMANAKA ET AL.

Examiner

Russell J. Kemmerle III

Art Unit

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 02/27/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "22a" in Figure 1 has been used to designate both "the stress mitigating layers" and what appears to be "a base dielectric layer" (labeled in the specification as 24a). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

Page 2, first full paragraph, "followings" appears to be a misspelling of "following";

Page 4, second line, "sated" appears to be a misspelling of "stated";

Pages 4-5, in the discussion of Fig 8A reference character "114" is not described.

Page 6, the first occurrence of the word "the" shown here appears to be unnecessary in the sentence "Thus, it can be said...does not always lead to **the** shortening **the** interconnection routes";

Page 11, reference character "24a" is not shown on Fig 1.

Page 12, last full paragraph, the reference character "30d" appears to be a mistype of reference character "20d";

Pages 14-16, the word "power" occurring on each of these pages appears to be a misspelling of "powder";

Page 17, fourth full paragraph, the conversion "3000 Pa*s (3,000 poise)" is incorrect (1 Pa*s = 10 poise).

The specification as originally filed appears to be a literal translation and contains several instances of improperly translated words or phrases (for example; "smaller-sizing" or similar phrases on for example page 1, "during being stored" on for example page 7, "before sintered" on for example page 18, page 25 "However, the base to be printed...bases can be printed", page 26 "In the above-described embodiment...may not be formed essentially in the stated order"). It is recommended that the applicant reread the specification and change wording or phrases that may have been improperly translated into proper idiomatic English.

Appropriate correction is required.

Claim Objections

Claims 16 and 17 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 16 and 17 fail to further limit the base claims from which they depend, since the base claims recite a method of fabricating a ceramic substrate, and claims 16 and 17 simply recite an end use of the product made, not a further limitation of the method claimed.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. These claims are rendered indefinite by the phrase "has a material composition **which is middle between a material composition** of the first...and...second dielectric material". The description of the material composition as middle between two other compositions is unclear as to what the applicant intends the material of the third dielectric material to be. This is further true do to the fact that the specification recites essentially the same language as the claim and fails to provide any guidance as to what the applicant intends.

Claims 10 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention. These claims are rendered indefinite by the phrase "the via is **formed in pole**". It is unclear what the applicant believes his invention to be or how this term further limits the preceding claims from which these claims depend.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyazaki ('617).

Referring to Claim 1, Miyazaki ('617) discloses screen printing a layer of conductive material over a base layer (page 4, paragraph 0061) and then screen printing a ceramic layer on the base layer in the areas in which the conductive material was not printed, thus forming a layer having both a conductive material region and a ceramic material region (page 4, paragraph 0062). Miyazaki ('617) goes on to disclose releasing the created layer from the support it was printed on (page 4, paragraph 0064) and firing the layer (page 4, paragraph 0065).

Referring to claim 12, Miyazaki ('617) is relied upon as discussed above. Miyazaki ('617) further discloses that conductive paste can be screen printed on to a base layer, in order to form a conductive layer (page 1, paragraph 7).

Thus, Miyazaki ('617) describes or reasonably suggests every limitation of Claims 1 and 12, and thus anticipates the claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-3, 8-11, 13, and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuki ('875) in view of Miyazaki ('617).

Referring to Claim 2, Otsuki ('875) discloses creating a substrate by forming several layers, each layer containing conducting and insulating regions, the layers being formed sequentially on top of one another (see Claims 1-5).

Otsuki ('875) does not disclose the method of forming the layers by screen printing each of the conducting and insulating regions.

Miyazaki ('617) is relied upon as discussed above in the rejection of Claim 1.

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to modify the method taught by Otsuki ('875) by depositing the material by screen printing as taught by Miyazaki ('617) since Otsuki ('875) discloses the method of forming the substrate by depositing layers of conducting and insulating regions on top of the previous layer, and Miyazaki ('617) discloses that screen printing is an effective means for depositing regions of conducting and insulating materials.

Referring to Claim 3, Otsuki ('875) is relied upon as discussed above. Otsuki ('875) further teaches forming electronic components (such as a capacitor, resistor, diode, transistor, etc.) in one or more of the layers of the substrate by depositing a

material with the desired characteristics on one of the layers (see Claims 14-18). Otsuki ('875) discloses creating several different types of electronic components (e.g., capacitor, resistor, diode, transistor, etc.), which would necessarily have different dielectric constants.

Otsuki ('875) does not disclose the method of forming the electronic components by screen printing the material to form the components on to one of the layers.

Miyazaki ('617) is relied upon as discussed above in the rejection of Claim 1.

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to modify the method taught by Otsuki ('875) by depositing the material to create the electronic components by screen printing as taught by Miyazaki ('617) since Otsuki ('875) discloses the method of forming the electronic components by depositing the desired material on top of a previous layer, and Miyazaki ('617) discloses that screen printing is an effective means for depositing material, insulative or conductive, in creating a ceramic substrate.

Referring to Claims 8 and 9 Otsuki ('875) is relied upon as discussed above. Otsuki ('875) further teaches forming a conductive section inside an insulative layer to electrically connect conductive sections above and below the insulative layer (i.e., a via) (page 12, paragraph 0286).

Otsuki ('875) does not disclose the method of forming the via by screen printing the material to form the via on to one of the layers.

Miyazaki ('617) is relied upon as discussed above in the rejection of Claim 1.

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to modify the method taught by Otsuki ('875) by depositing the material to create the via by screen printing as taught by Miyazaki ('617) since Otsuki ('875) discloses the method of forming the via by depositing the desired material on top of a previous layer, and Miyazaki ('617) discloses that screen printing is an effective means for depositing a conductive material in a layer where the rest of the layer is made of an insulative material.

Referring to claims 10 and 11, Otsuki ('875) is relied upon as discussed above. Otsuki ('875) further discloses that the via is formed by depositing a post on top of a conductive section to electrically connect the lower conductive layer to an upper conductive layer (page 12, paragraph 0286).

Otsuki ('875) does not disclose the method of forming the via by screen printing a post on to a conductive section to electrically connect that conductive section to an upper conductive region.

Miyazaki ('617) is relied upon as discussed above in the rejection of Claim 1.

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to modify the method taught by Otsuki ('875) by depositing the material to create the via as a post on a conductive section to electrically connect a lower conductive layer to an upper conductive layer by screen printing as taught by Miyazaki ('617) since Otsuki ('875) discloses the method of forming the via as a post by depositing the desired material on top of a lower conductive layer, and Miyazaki ('617)

discloses that screen printing is an effective means for depositing a conductive material on top of a lower layer.

Referring to Claim 13, Otsuki ('875) is relied upon as discussed above.

Otsuki ('875) does not disclose the method of screen printing a conductive paste on a base layer to form a conductive layer.

Miyazaki ('617) is relied upon as discussed above in the rejection of Claim 1. Miyazaki ('617) further discloses that conductive paste can be screen printed on to a base layer, in order to form a conductive layer (page 1, paragraph 7).

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to modify the method taught by Otsuki ('875) by screen printing a conductive paste on a base layer to form a conductive layer as taught by Miyazaki ('617) since Miyazaki ('617) discloses that screen printing a conductive paste on to a base layer is an effective and well known process for creating a conductive layer.

Referring to claims 16 and 17, Otsuki ('875) is relied upon as discussed above, particularly in the rejection of Claim 3 above. Otsuki ('875) discloses creating a capacitor in the substrate (page 13, paragraph 0294) and other electronic components (such as a resistor, diode, or transistor) (Claims 14-18).

Otsuki ('875) does not disclose the method of forming the electronic components by screen printing the desired material on the desired locations of the layers.

Miyazaki ('617) is relied upon as discussed above in the rejection of Claim 1.

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to modify the method taught by Otsuki ('875) by arranging the

components taught by Otsuki ('875) to create the components claimed by the applicant in Claims 16 and 17 since the components claimed by the applicant are simply a specific arrangement of the components taught by Otsuki ('875), and the technique of forming them into the filters and other components claimed by the applicant is well known. It would have further been obvious to one of ordinary skill in the art, at the time of invention by applicant, to modify the method taught by Otsuki ('875) by depositing the material to create the electronic components by screen printing as taught by Miyazaki ('617), since Miyazaki ('617) discloses that screen printing is an effective means for depositing material, insulative or conductive, in creating a ceramic substrate.

Referring to Claims 18 and 19, Otsuki ('875) is relied upon as discussed above. Otsuki ('875) further discloses placing a second layer of an insulative material over the conductive layer to bury it (see Fig 23, showing conductive layers, 410 and 412, completely covered by an insulative layer, unnumbered).

Otsuki ('875) does not disclose the method of completely covering the conductive layer with an insulative layer by screen printing the materials.

Miyazaki ('617) is relied upon as discussed above in the rejection of Claim 1.

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to modify the method taught by Otsuki ('875) of burying the conductive layer under the insulative layer by screen printing the insulative layer over the conductive layer as taught by Miyazaki ('617) since Otsuki ('875) discloses the method of burying the conductive layer under the insulative layer, and Miyazaki ('617)

discloses that screen printing is an effective means for depositing layers of conducting and insulating materials.

Referring to Claim 20, Otsuki ('875) is relied upon as discussed above. Otsuki ('875) further discloses a first and third layer made of a conductive material, and a second layer made out of an insulator to form a capacitor (i.e., a passive element) (page 13 paragraph 0294).

Otsuki ('875) does not disclose the method of forming the passive element by screen printing each of the conductive and insulative layers.

Miyazaki ('617) is relied upon as discussed above in the rejection of Claim 1.

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to modify the method taught by Otsuki ('875) by depositing the material to create the passive element by screen printing the conductive and insulative materials as taught by Miyazaki ('617) since Otsuki ('875) discloses the method of forming the passive element by depositing the desired material in the desired configuration, and Miyazaki ('617) discloses that screen printing is an effective means for depositing a conductive or insulative material in creating a ceramic substrate.

Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki ('617) in view of Ushikoshi ('606).

Referring to Claim 4, Miyazaki ('617) is relied upon as discussed above in the rejection of Claim 1.

Miyazaki ('617) fails to disclose using a material to act as a stress mitigating region between two other regions.

Ushikoshi ('606) discloses placing a protective or stress mitigating layer between different materials to reduce the likelihood of cracks or other problems in the laminated piece (Col 9, lines 1-5).

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to modify the method taught Miyazaki ('617) of screen printing a layer containing both an insulative and conductive region by adding a third stress mitigating region as taught by Ushikoshi ('606) since Miyazaki ('617) places no limit on the number of regions which could be screen printed on one layer, and Ushikoshi ('606) discloses the desirability of a stress mitigating layer to help reduce cracking and other problems in a laminated piece.

Referring to Claim 6, Miyazaki ('617) is relied upon as discussed above in the rejection of Claim 1.

Miyazaki ('617) fails to disclose using a material with a composition which is middle between the two proximate materials to act as a stress mitigating region for the two proximate regions.

Ushikoshi ('606) discloses using Molybdenum Oxide as a stress mitigating region between regions of Molybdenum Carbide and Aluminum Nitride.

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to modify the method taught Miyazaki ('617) of screen printing a layer containing both an insulative and conductive region by adding a third stress mitigating region as taught by Ushikoshi ('606) since Miyazaki ('617) places no limit on the number of regions which could be screen printed on one layer, and Ushikoshi ('606)

discloses the desirability of a stress mitigating layer to help reduce cracking and other problems in a laminated piece. It would have been further obvious to one of ordinary skill in the art, at the time of invention by applicant, to have created the stress mitigating region using a material with a composition middle between the two proximate materials since Ushikoshi ('606) discloses using Molybdenum Oxide as a stress mitigating region between regions of Molybdenum Carbide and Aluminum Nitride.

Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuki ('875) in view of Miyazaki ('617), in further view of Ushikoshi ('606).

Referring to Claim 5, Otsuki ('875) is relied upon as discussed above in Claim 2. Otsuki ('875) does not disclose the method of forming the regions by screen printing each of the conducting and insulating layers.

Miyazaki ('617) is relied upon as discussed above in the rejection of Claim 1.

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to modify the method taught by Otsuki ('875) by depositing the materials by screen printing as taught by Miyazaki ('617) since Otsuki ('875) discloses the method of forming the substrate by depositing several conducting and insulating regions on top of the previous layer, and Miyazaki ('617) discloses that screen printing is an effective means for depositing regions of conducting and insulating materials.

Otsuki ('875) in view of Miyazaki ('617) does not teach the method of sequentially screen printing layers of an insulative and conductive material to create a plurality of stacked layers, where a third material is screen printed between the conductive and insulative materials to act as a stress mitigating region.

Ushikoshi ('606) discloses placing a protective or stress mitigating region between different materials to reduce the likelihood of cracks or other problems in the laminated piece (Col 9, lines 1-5).

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to modify the method taught by Otsuki ('875) in view of Miyazaki ('617) of sequentially screen printing layers of an insulative and conductive material by adding a third stress mitigating region as taught by Ushikoshi ('606) since Miyazaki ('617) places no limit on the number of regions which could be screen printed on one layer, and Ushikoshi ('606) discloses the desirability of a stress mitigating region to help reduce cracking and other problems in a laminated piece.

Referring to Claim 7, Otsuki ('875) in view of Miyazaki ('617) is relied upon as discussed above in the rejection of claim 5.

Otsuki ('875) in view of Miyazaki ('617) does not teach the method of sequentially screen printing layers of an insulative and conductive material to create a plurality of stacked layers, where a third material is screen printed between the conductive and insulative materials to act as a stress mitigating region, the third material having a material composition middle between the conductive and the insulative materials.

Ushikoshi ('606) discloses placing a protective or stress mitigating region between different materials to reduce the likelihood of cracks or other problems in the laminated piece (Col 9, lines 1-5). Ushikoshi ('606) further discloses using Molybdenum Oxide as a stress mitigating region between regions of Molybdenum Carbide and Aluminum Nitride.

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to modify the method taught by Otsuki ('875) in view of Miyazaki ('617) of sequentially screen printing layers of an insulative and conductive material by adding a third stress mitigating region as taught by Ushikoshi ('606) since Miyazaki ('617) places no limit on the number of regions which could be screen printed on one layer, and Ushikoshi ('606) discloses the desirability of a stress mitigating region to help reduce cracking and other problems in a laminated piece. It would have been further obvious to one of ordinary skill in the art, at the time of invention by applicant, to have created the stress mitigating region using a material with a composition middle between the two proximate materials since Ushikoshi ('606) discloses using Molybdenum Oxide as a stress mitigating region between regions of Molybdenum Carbide and Aluminum Nitride.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki ('617) in view of Yamana ('374).

Miyazaki ('617) is relied upon as discussed above in the rejection of Claim 12.

Miyazaki ('617) does not disclose, after screen printing a conductor layer on the base layer, pressurizing the basic layer and conductor layer to planarize the basic layer and conductor layer.

Yamana ('374) discloses coating an electrode paste on to a ceramic green sheet, and then subjecting the combined layer to a pressure in order to smooth it (page 6, paragraph 0093, Claim 1).

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It would have been obvious to one of ordinary skill in the art, at the time of invention by the applicant, to modify the method of screen printing a conductive layer on to a base layer as taught by Miyazaki ('617) by adding the step of applying pressure to the combined layer to smooth the surface as disclosed by Yamana ('374), since Yamana ('374) discloses that adding the step of pressurizing the layer helps reduce cracking and delamination in the final piece.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuki ('875) in view of Miyazaki ('617), in further view of Yamana ('374).

Otsuki ('875) in view of Miyazaki ('617) is relied upon as discussed above in the rejection of Claim 13.

Otsuki ('875) in view of Miyazaki ('617) does not teach , after screen printing a conductor layer on the base layer, pressurizing the basic layer and conductor layer to planarize the basic layer and conductor layer.

Yamana ('374) discloses coating an electrode paste on to a ceramic green sheet, and then subjecting the combined layer to a pressure in order to smooth it (page 6, paragraph 0093, Claim 1).

It would have been obvious to one of ordinary skill in the art, at the time of invention by the applicant, to modify the method of screen printing a conductive layer on to one of a plurality of base layers as taught by Otsuki ('875) in view of Miyazaki ('617) by adding the step of applying pressure to the combined layer to smooth the surface as disclosed by Yamana ('374), since Yamana ('374) discloses that adding the step of pressurizing the layer helps reduce cracking and delamination in the final piece.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. 2003/0,150,384 (Baude et al.); 2003/0,152,691 (Baude et al.); 2005/0,042,365 (Baude et al.); and 6,821,348 (Baude et al.) all teach forming circuit elements by depositing different parts of each layer through an aperture mask using chemical vapor deposition or similar techniques. 4,335,161 (Luo); 4,345,955 (Bakermans et al.); 6,808,577 (Miyazaki et al.).


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russell J. Kemmerle III whose telephone number is 571-272-6509. The examiner can normally be reached on Monday through Friday, 8:30-4:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RK



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